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Patent Claims

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1. Process for producing a fibre composite material containing fibres with a high hot strength, in particular based on carbon, silicon, boron and/or nitrogen, a pressing compound being produced from
10 fibres, binder and, if appropriate, fillers and/or additives, which is then pressed in a press mould to form a green body, characterized in that various pressing compounds are produced, which contain fibres of different qualities and/or in different proportions,
15 and the press mould is filled with the various pressing compounds in a plurality of successive steps.

2. Process according to Claim 1, wherein the press mould is filled without preforming.

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3. Process according to one of the preceding claims, characterized in that fibres which have been coated with a layer of pyrolysable binder are used.

25 4. Process according to one of the preceding claims, characterized in that fibres which have been coated with a layer of pyrolytic carbon and with a layer of pyrolysable binder are used.

30 5. Process according to one of the preceding claims, characterized in that differently coated fibres are used for the various pressing compounds.

35 6. Process according to Claim 5, characterized in that the press mould is filled with the differently coated fibres in such a manner that a green body is formed, from which it is possible to obtain a fibre

composite material with a substantially graphite core and a substantially ceramic surface.

5 7. Process according to Claim 6, characterized in that fibres with a pronounced coating are used for the substantially graphite core and fibres with a thin coating and/or fibres without a coating are used for the substantially ceramic surface.

10 8. Process according to Claim 6, characterized in that fibres with a coating which is relatively unreactive with respect to the matrix are used for the substantially graphite core and fibres with a coating which is more reactive with respect to the matrix are
15 used for the substantially ceramic surface.

20 9. Process according to one of the preceding claims, characterized in that substantially short fibres or short fibre bundles are used to produce the pressing compounds.

25 10. Process according to one of the preceding claims, characterized in that fibres of different lengths are used for the various pressing compounds.

11. Process according to one of the preceding claims, characterized in that fibres made from different materials are used for the various pressing compounds.

30 12. Process according to one of the preceding claims, characterized in that to produce the pressing compounds the individual components are processed into granules, in particular by being pelletized, and the granules are dried and pressed to form the green body.
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13. Process according to Claim 12, characterized in that the granules are pressed by dry or hot extrusion.

14. Process according to one of Claims 1 to 11, characterized in that to produce the pressing compound the individual components are mixed in a kneader and the mixture is pressed to form a green body.

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15. Process according to one of the preceding claims, characterized in that a heat-curable binder is added to the pressing compound, and the pressed green body is cured by heating.

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16. Fibre composite material containing fibres with a high hot strength, in particular based on carbon, silicon, boron and/or nitrogen, characterized in that it can be produced using the process according to one of Claims 1 to 15.

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17. Fibre composite material containing fibres with a high hot strength, in particular based on carbon, silicon, boron and/or nitrogen, characterized in that it comprises at least 2 different layers which merge into one another and contain fibres of different qualities and/or in different proportions.

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18. Fibre composite material according to Claim 17, characterized in that it contains fibres with a layer of carbon and/or pyrolytic carbon.

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19. Fibre composite material according to Claim 17 or 18, characterized in that the various layers have differently coated fibres.

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20. Fibre composite material according to one of Claims 17 to 19, characterized in that it has a substantially graphite core and a substantially ceramic surface.

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21. Fibre composite material according to Claim 20, characterized in that the substantially graphite core

contains fibres with a pronounced coating and the substantially ceramic surface contains fibres with a thin coating and/or fibres without a coating.

5 22. Fibre composite material according to Claim 20,
characterized in that the substantially graphite core
contains few or no fibres which are reaction-bonded to
the matrix, and the substantially ceramic surface
contains predominantly or exclusively fibres which are
10 reaction-bonded to the matrix.

23. Fibre composite material according to one of
Claims 17 to 22, characterized in that it substantially
contains short fibres or short fibre bundles.

15 24. Fibre composite material according to one of
Claims 17 to 23, characterized in that the various
layers contain fibres of different lengths.

20 25. Fibre composite material according to one of
Claims 17 to 24, characterized in that the various
layers contain fibres made from different materials.